

**REMARKS**

Claims 4-8 are pending in the above-identified application. Claims 4-8 were rejected. With this Amendment, claim 4 has been amended. Accordingly, claims 4-8 remain at issue.

**I. 35 U.S.C. § 112 Indefiniteness Rejection of Claims**

Claim 4 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicant respectfully traverses this rejection.

Applicant respectfully asserts that the specification provides ample support to satisfy the enablement requirement with respect to claim 4, and in particular, the "shut-off holding means." Applicant takes this opportunity to clarify the invention for the Examiner and cite to specific portions of the specification that serve to satisfy the enablement requirement.

The specification discloses that a charge detector 32 is connected between the external plus terminal 5 and the external minus terminal 17. (page 17, lines 2-3.) This detector 32 continuously detects the voltage between the external plus terminal 5 and the external minus terminal 17. (page 17, lines 4-5.) A resistor block 31 is connected in parallel with the detector 32 between the external plus terminal 5 and the external minus terminal 17. (page 17, lines 5-7.) The resistor block 31 preferably has a resistance between 1k $\Omega$  and 200M $\Omega$ . (page 16, lines 27-29.)

If the external plus terminal 5 and the external minus terminal 17 of the protection circuit 30 are short-circuited by an electrical wire, or load having a low resistance from outside the battery pack, a large current is forced out of the battery cell 1. (page 17, line 30 through page 18,

line 3.) This abnormal current is detected by the overcurrent voltage detection terminal 23 of the control IC 7, which outputs a discharging control signal 25 to turn the discharging control switch 13 off, or open it. (page 18, lines 3-7.) As a result, the discharging is shut off. (page 18, line 7.) The resistor block 31 is then used to maintain the discharging shut-off condition. (page 18, line 12-15.)

In the January 26, 2007, Office Action, the Examiner asserted that turning off, or opening, the discharging control switch 13 would disconnect the resistor 31. However, the specification makes clear that is not the result. When the discharging control switch 13 is open, the function of the diode 12 allows charging of the battery cell 1, but disables discharge into the load. (page 5, lines 1-2.) One of ordinary skill in the art would appreciate that the resistor block 31 remains connected, and a resistor block 31, particularly one of the claimed magnitude, serves to dissipate energy, and thus would maintain the discharging shut-off condition by opposing the flow of current. Therefore, the shut-off holding means, as recited in claim 4, is sufficiently described so as to comply with the enablement requirement. Accordingly, Applicant respectfully requests this rejection be withdrawn.

## **II. 35 U.S.C. § 103 Obviousness Rejection of Claims**

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of *Lieser* (U.S. Patent No. 3,480,940).

In the Office Action of January 26, 2007, the Examiner acknowledged that the AAPA does not disclose the shut-off holding means. Applicant respectfully submits that *Lieser* also does not disclose the shut-off holding means as recited in claim 4.

*Lieser* discloses an apparatus for indicating the operability of an appliance which draws power periodically from an electrical supply, such as a refrigerator or freezer. (col. 1, lines 9-13.) Unlike the claimed invention, Applicant respectfully submits that *Lieser* is not directed to providing a protection circuit to shut off discharge. *Lieser* simply discloses a apparatus having a battery 30 with an adjustable battery discharge resistor 34 connected across the battery 30. (col. 2, lines 64-66.) The discharge rate in *Lieser* may be varied by adjusting the discharge resistor 34 to keep the battery voltage above a predetermined minimum value while the appliance is operating at a normal level. (col. 2, lines 67-69.)

Unlike independent claim 4, *Lieser* does not disclose or suggest a shut-off holding means comprising a resistor block of resistance larger than 1 k $\Omega$  and smaller than 200 k $\Omega$ . Further, the adjustable battery resistor in *Lieser* is quite different from the claimed shut-off holding means. Unlike claim 4, *Lieser* discloses an adjustable resistor to keep the battery voltage above a minimum while the appliance is operating at a normal level. Claim 4, however, recites that the shut-off holding means is used to maintain discharge shut-off while shorting is taking place. This feature of the claim is not disclosed or contemplated by *Lieser*. Therefore, while not conceding that it is at all proper to combine *Lieser* with the AAPA, for at least the reasons described above, neither *Lieser* nor the AAPA disclose or even suggest a shut-off holding means as recited in claim 4. Claims 5-8 depend from claim 4. Accordingly, Applicant respectfully requests this rejection be withdrawn.

**III. Conclusion**

In view of the above amendments and remarks, Applicant submits that all claims are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

Respectfully submitted,

Dated: May 23, 2007

By: /David R. Metzger/  
David R. Metzger  
Registration No. 32,919  
SONNENSCHEIN NATH & ROSENTHAL LLP  
P.O. Box 061080  
Wacker Drive Station, Sears Tower  
Chicago, Illinois 60606-1080  
(312) 876-8000